THE PROGRESS OF PATHOLOGICAL SCIENCE.

THE PROGRESS OF PATHOLOGICAL SCIENCE: JOHN BAPTIST MORGAGNI AND HIS SUCCESSORS.[1]

An Inaugural Address, delivered as President to the Pathological and Clinical Society of Glasgow.

The circumstance of your having unanimously re-elected me as President of this Society at the termination of its first session, thereby imposing upon me the duty and the pleasure of occupying the chair on the present occasion, is one which demands of me not only a grateful recognition of the personal compliment implied in it, but an earnest endeavour to do the best I can to advance the interests and facilitate the business of the Society. I have, therefore, thought that although elaborate addresses form no part of our business, I might, perhaps, with advantage endeavour to become so far your spokesman as to indicate what appears to me to be our true position—the limitations,

[1] *British Medical Journal*, October 24th, 1874, vol. 2, p. 515.

ends, and methods of our work, and the objects generally that we may reasonably propose to ourselves among the many scientific associations established here and elsewhere for the cultivation of medicine. If I have any personal qualifications for this task, they certainly do not arise from my having been in any sense whatever the founder of this Society; on the contrary, the Society was planned and manned, and its principles and equipment were in great part arranged even in detail, before I was asked to join it. Moreover, I speak my own perfectly frank personal opinion, when I say that my joining you was not in any way essential to your success, nor was it even a material help in the very excellent way you have struck out for yourselves; it is for me simply a legitimate source of honest pride to think that, after so much had been done, the opinion of the early members turned to me as to one able to assist them in organizing their resources, directing their counsels, and presiding over their discussions. I believe that if I can fulfil this duty aright, I shall be doing what I can to advance the progress of scientific medicine in this great community; that I shall be therein helping, as far as in me lies, to lay a solid foundation for the medical art, which at all times needs such a foundation to protect it from th storms and passions of a false and vain popularity; that I shall be aiding the exertions of this University and medical school to train up a body of medical prac-

titioners imbued with the love of nature and of truth; content, nay eager, to know what can be known, but, for that very reason, careful not to pretend to a shallow and showy *omniscience*, either in regard to the causes or the cure of disease. I will go further, and say that, in my opinion, the *educating* influence of such a society as this is its true *raison d'être;* and, were it not that I believe your society is well constituted for such a purpose, my remaining interest in it, at least as a teacher and professor of medicine, would be but small. I shall proceed to justify these statements, and I trust that in doing so I may be able to strike a chord of sympathy with you that will show how far we have agreed hitherto, and how far we are likely to work together for good hereafter. If, as I believe, the Pathological and Clinical Society has its roots in a strongly felt need among you; if that need issues from a desire to build up medical science upon a foundation of solid fact; to give no quarter to vain imaginations, and to have nothing to do with those current phrases too common both among the public and in the profession, by which a half-informed or fashionable sciolism pronounces judgments upon things that are not, and perhaps never can be, known; if, I say, these are the motives that prompted the origination of this Society, then we need not hesitate in believing that it will continue to live and work, even in the far future, when its present members shall have ceased to live and to work;

and that it will be a permanent source of benefit to our science and our art. For the facts to which we appeal are eternal; the nature which we cultivate, even though it be the nature of disease, is only too likely to remain as long as the causes of disease exist in our great communities; and the fluctuating mass of opinion, which we call medical theory, or doctrine, or dogma, whether right or wrong, can no more disturb the basis of fact on which we repose than the winds of heaven can unsettle the great Pyramid. And there is this advantage in a society which professes to be, and, in respect of its plan at least is, independent of such fluctuations; that in all times it may be expected to exercise a healing influence upon all kinds of error and strife, and upon loose and vague assertion in professional discussions elsewhere; not by strongly opposing individual errors, but by presenting to all phases of medical doctrine the unerring and underlying basis of natural fact upon which medical science reposes, and without conformity to which no doctrine or dogma can live more than the life of a day.

We are a Pathological and also a Clinical Society; let us consider the meaning of these two expressions, and consider also how far they differentiate us, so to speak, from other associations having the improvement of the medical art in view. We are, in the first place, a pathological society; that is, our object is the investigation of the doctrine, as based upon the phenomena,

of disease. But this object of ours is to be interpreted in the light of one of our fundamental regulations; viz., that communications to this society are to be invariably[1] founded on some visible or tangible object, something which may be judged of by the members independently of the opinion of the writer or speaker; something real, objective, and therefore impersonal, around which discussion is to circulate, and from which it is never, as a rule, to be allowed to stray very far. Here is our radical cure for all false and empty discussion; we sacrifice, it is true, something of mere personal interest, and something also of possible advantage in the airing of various and widely contrasted opinions; but we obtain instead well-grounded statements, and, in most cases, the correction of all serious errors at their source. We desire most fully to acknowledge the advantages which the science of medicine has reaped at all times from the most full and free discussion; and most of us are members also of other societies, where every kind of opinion that is not absolutely trivial or inept may obtain such recognition as it deserves. Our objection, therefore, to theories not founded on obvious facts is,

[1] A departure has taken place, in the later history of the Society, from this first principle in several instances by the interpolation of discussions, under conditions fixed by the Council or by the Society itself, upon subjects specially selected; and these discussions have been very interesting, and have attracted speakers of distinction from London and elsewhere.

not that we are in any way afraid of them, or even that in all cases we contemn them, but simply that our programme is different; that we give the obvious fact the first place, the theory which springs from it the second; that we prefer to discuss the latter in presence of, and by the light of, the former; that we aim more at the verification of the facts presented to us than at the construction or destruction of the opinions attached to them, although we by no means disregard these when they come naturally within the sphere of our business.

The first name of our society, the "Pathological," especially in connection with the explanation now given of its main object, might seem to indicate that we have sprung from the same wants, and are to be guided by the same methods and regulations, as the great and valuable "Pathological Society of London," which has, almost in the very days in which we are now meeting, completed a quarter of a century of its life and issued the twenty-fifth volume of its *Transactions*. The parallel is not undesigned, nor is it without a considerable element of truth; for our objects and aims, though not our actual accomplishments, have in fact a very great and near resemblance to those of the London society. But there is one difference: the London Pathological Society has adopted the expressive motto, *Nec silet Mors*, and has thereby indicated that the chief, if not the only, objects of its special studies are to be the ultimate results of disease as displayed in the dead body; the

wrecks, as it were, of our physical being when hopelessly damaged and beyond repair. In these, it has found an abounding and a most fruitful occupation; it has carried out its motto to the full; the dead relics speak, in its *Transactions*, with voices sometimes of warning, sometimes of encouragement, always, or nearly always, of most wholesome and invaluable instruction to the living. It is not because we despise these voices that we have avoided thus limiting our programme, but because, in a smaller field and with fewer resources, we have been naturally guided, as it were, into a different course; and we have, therefore, adopted the name "Clinical," as showing distinctly that *all* the facts and phenomena of disease, in so far as they admit of demonstration, are within the sphere of our operations. And there is in this view of the matter, if I mistake not, one literally immense advantage. It is not for the benefit of science that the living and the dead aspects of disease should be studied apart; nor are they so studied, in fact, either in the London "Pathological" or in its younger neighbour, and necessary supplement, the "Clinical" Society. We hold the processes of disease to be one and the same in kind, whether they issue in the spoiling of a function, or of an organ, or, as most commonly happens, of both together. And we hold, therefore, that the method of observation is the best which conjoins these two fields of observation, and adds to the study of organic ruins that of deranged vital phenomena.

Hence it is that we have assumed the twofold name of the Glasgow Pathological and Clinical Society. We intend thereby to indicate that whatever can be demonstrated in relation to disease, upon the basis of actual facts and cases submitted to observation, is within the programme of business we have set out for ourselves; and, in order to do justice to that business as far as possible, we have arranged to have in the meantime only a limited number of working members, each of whom, however, may introduce a friend, so that our doors are never closed to any one who has facts to communicate, or from whose knowledge of a special subject we may obtain instruction, or who, on his part, may wish to participate in our researches. It is possible that our regulations and bye-laws may in this respect be modified by future experience; but it has been considered best to begin with a somewhat select body of workers, in order that the interest felt by each in the whole body may not flag, and also that mutual confidence may be established, and that the younger and less experienced members may not be overawed or deterred by mere verbal criticism, or by empty discussion for discussion's sake, such as we have sometimes observed to prevail in larger and more miscellaneous associations. Besides, it has been found, as a matter of practical experience, that, among too great numbers, individual cases and facts lose a portion of their interest; microscopic demonstrations, ophthalmoscopic

and other observations requiring time, are very imperfectly followed out, and so a habit is acquired of allowing valuable materials to pass without due examination —a habit which would be dangerous, if not fatal, to what I have called the *educating* influence of the society.

Such is our programme, gentlemen, and such the means by which we propose to carry it out. And now let me ask for a moment, What are the benefits which we may expect, individually and collectively, to reap for ourselves and for the medical science and art, from a diligent cultivation of them in the spirit here indicated? Let us look back a little on the course of medical history, and then attempt to realize in some measure what has been and is the tendency of its progress in our own day.

About a hundred years ago there died, at the great age of 90, a man into whose life-long labours we and all other pathological societies have entered, and whose marvellous industry, erudition, and original genius may be said almost to form the link between the spirit of ancient and of modern medicine. This was John Baptist Morgagni, professor successively in Bologna and Padua, and author of the world-renowned and epochal work, *De Sedibus et Causis Morborum, per Anatomen indagatis.*[1] Previously to this great work (and, in some

[1] Published at Venice in 1761.

respects, still long after its publication), the conventional and often repeated formal descriptions of diseases and their symptoms still retained almost exactly the pressure of the mould into which they had been cast ages before by Hippocrates and Galen. Even Sydenham (the "English Hippocrates," as he was called), though greatly enriching the description and classification of symptoms from the wealth of his own great personal experience, had not ventured to ask himself, much less to inform others, if apoplexy, and epilepsy, and continued fever, and gout, and dropsy, and phthisis (to take only a few examples), were anything more than in each case a name applied to a group of symptoms, the causes of which were to be found, if found at all, in some fantastic theory of crudity or imperfect action of the humours, rendering necessary a struggle on the part of nature to throw off the unknown force of evil which oppressed her. Such, at least, was Sydenham's view of all fevers, which he regarded as differing from each other only in the different atmospheric conditions which gave rise to them epidemically. Such also was his theory of gout, which he pronounced, after Hippocrates, to be "a provision of nature for depurating the blood of old men;" and, indeed, his ultimate view of all pathology, as contained in the introductory chapter added late in his life to his greatest work, was to the effect that "a disease is nothing else than an effort of nature, struggling by every means to exterminate the

morbific matter, and so restore health to the patient."[1] This was, in fact, the old humoral pathology, which held its ground almost unchanged for centuries, during which the science of medicine made scarcely any real progress. And no wonder; for, even admitting that the idea of a *materies morbi* had some elements of truth about it, the use that was made of this idea was so little in accordance with strict investigation, that it became an absolutely plastic hypothesis, fitting in with equal facility to any and every description of symptoms. The theory which ascribed diseases, for example, to a "black bile" (which had never been demonstrated), or to acidity, or an alkaline cause, or a "spontaneous gluten" (as Boerhaave has it), is but one remove from the childish and unscientific conception of occult or direct supernatural agencies, which, even in the fifth century before the Christian era, came under the destructive criticism of Hippocrates in the case of epilepsy —the so-called ἱερὸς νόσος, or sacred disease.[2] All such theories (and the same remarks may be made of the solidist and vitalist theories for the most part, not less than of the humoral) are to be regarded simply as a mode of escape for the mind from the strict control of facts; an "*anticipatio naturæ*," as Lord Bacon would

[1] *Observ. Med.* cap i. "*De Morbis Acutis in genere.*"

[2] See the treatise *On the Sacred Disease*, 1, 2; compare also the remarks on the effeminacy of the Scythians in the treatise *Of Airs, Waters, and Places*, 22.

have said, or rather, a substitution of baseless, or nearly baseless, speculations of the mind for the processes of rigid investigation.

Now, to this method of dealing with the facts and symptoms of disease, the whole spirit and method of the great work of Morgagni are in every point opposed. I do not mean to say, of course, that he never falls into such speculations, or adopts them in his reasoning from the current language and philosophy of his time. But, in all essential points, his work is based upon a far more genuine appreciation of real science than was apparently possible to the partisans either of the humoral or of any other so-called philosophy of disease. The method which he opposes to such generalizations is simply that of careful observation and induction, founded upon almost innumerable dissections and histories of disease observed during life. This method (which he borrowed from Valsalva, along with an immense store of facts as the nucleus of his great work) becomes, in the hands of Morgagni, a veritable Ithuriel's spear or touchstone of truth. It is at once destructive and constructive; it shivers false theories to atoms; it replaces them by new and unlooked-for combinations of fact, which of themselves build up a theory, in many cases of permanent and still undiminished value, because it is simply the logical statement of an enlarged and carefully-noted experience. Thus, in investigating the *seats* of diseases, Morgagni is not content to record the

coincidence of a lesion in an organ with the symptoms apparently due to disordered function in that organ. For the first time almost in the history of medical inquiry, he insists on examining every organ, as well as the one suspected to be chiefly implicated; not only so, he marshals with the utmost care, from his own experience and that of his predecessors, all the instances in which the symptoms have existed apart from the lesion, or the lesion apart from the symptoms; he discusses each of these instances with severe exactness in the interest of truth, and only after an exhaustive investigation will he allow the inference either that the organ referred to is, or is not, the seat of the disease. And, in like manner in dealing with causes:—a group of symptoms *may* be caused by certain organic changes; it may be even probable that it is so; but, according to Morgagni's method, we must first inquire into *all* the lesions of organs that occur in connection with such symptoms; in the second place, we must know if such lesions ever occur or concur without the symptoms; and, again, if such symptoms can be attributed in any cases to other causes in the absence of such lesions. Only after all these questions are discussed in the light of a large and varied experience, will this great master of pathological reasoning admit any absolute conclusion as to the organic cause of the disease.

It would be easy to give ample illustrations of this admirable method from the work of Morgagni himself;

but, as the object of this address is not historical nor literary, but practical so far as we ourselves and our work here are concerned, I prefer to look at what Morgagni's pathological and clinical method has done for us in the light not only of his own researches, but of those of his successors. For, from this point of view, all the more eminent moderns, and even the men of our own time, although they work with new means and appliances, amid a flood of new light from physiology and histological anatomy, and amid a science of organic chemistry which it may be said has been created, and extended, and applied, within the present century almost exclusively, are all of them successors and legitimate heirs of Morgagni's labours and method, in so far as they aim at uniting clinical with pathological research by strict processes of reasoning founded on multiplied observations. For it is this method and this spirit that make the essential distinction of the modern-minded physician or surgeon, and that separate him *toto cœlo* from the man whom Molière has depicted for us in caricature—most laughable, and, perhaps, unfair, but still not quite outrageous caricature, if we may trust contemporary letters and documents. The men of the century preceding Morgagni were divided into hostile camps; and it may be said that their discussions, so far as we know them, were generally not about facts, but about mental abstractions or scholastic wire-drawn analogies. Theories of diseased action so remote from

evidence, and so comprehensive that it was impossible to get beyond the sweep of their drag-net, occupied all the schools, and gave the tone to the teaching from every professor's chair. "Under which king, Bezonian?" was the question addressed to every pupil and almost to every practitioner, who was almost compelled to be a humoralist, or a solidist, or a vitalist, without exactly knowing why he was so. And the practice was like the pathology; it was either modelled slavishly on custom and tradition, or it broke violently loose from these upon the basis of some outrageous dogma, which did not even assert for itself a birth out of carefully-studied evidence, but only out of the dust of the arena, the fierce polemics of contending factions. It was scarcely a very violent caricature of the practice of his day, when Boileau compressed its results as regards the patient into one stinging line—

"L'un meurt vuide de sang, l'autre plein de séné,"

or even when Molière, out of his unbounded contempt for the whole apparent resources of the art, represents the whole chorus of the Faculty as loudly approving the barbarous statement of them by Argan—

"Clysterium donare,
Postea seignare,
Ensuita purgare,
Repurgare, reseignare, et reclysterizare."

I do not mean to assert that Morgagni himself entirely escaped the influence of these debased traditions of art,

or that we his successors have in all cases even now got clear of them; but it may be safely said that the foundations were laid by the Professor of Padua for our escape, and that all the good work done and yet to do, in this direction, has been, and must be, guided by the spirit and method of his work. And in this sense I claim not only the professed and exclusive morbid anatomists, but also, and still more, almost all the greatest physicians and surgeons of our own and the last century, as the legitimate successors of Morgagni and the inheritors of his method of working. Without him, we should probably have waited much longer for Laennec, and might very probably have been at this hour without the stethoscope, and all that it has brought us. Without him, we should almost certainly have been without those means and appliances in all our hospitals, which produced for us in this country Baillie, the Hunters, Astley Cooper, Richard Bright, Abercrombie, Hope, Watson, Latham, and a host of others both at home and abroad, who have contributed their stores of experience to an investigation of disease at once clinical and pathological. The pathology of continued fever and the differentiation, upon sure grounds of fact, of its varieties; all the work, in fact, which is represented by the labours of Bretonneau and Louis in France, of Stewart, Jenner, and Murchison in this country, is a direct emanation from the school and method of Morgagni, and has, like

the work of the Italian physician, been quietly dispersing a whole dark cloud of visionary pathology and erroneous practice; the old names of febris pituitosa, biliosa, nervosa, putrida, maligna, etc., have disappeared, and order has entered in where there was formerly a chaos; as a consequence of this, our information as to causes has grown to a reasonable degree of precision, and preventive medicine has obtained access to a realm where the blind fear of contagion was at one time the sole dominating idea. And, although we have as yet no grand curative discovery to boast of in this department, yet who shall say that it is nothing to have studied accurately the natural history of these diseases, and so to have been saved from the errors of Broussaisism on the one side, and Brunonianism on the other? nothing, that the whole realm of the continued fevers of this country has been rescued from confusion; that diagnosis has been rendered exact, and statistical conclusions possible? For it is strictly in accordance with historical truth to say, as I now do say, that these results we owe to a rigid application, by many and varied minds, of principles derived in great part from the work of Morgagni.

Then cast a glance, if only but for a moment, over the great results which the same clinical and pathological method has worked out for us in the departments of cardiac, renal, cerebral pathology; how, in the memory of men now living, the diagnosis of valvular diseases,

embolism, uræmic poisoning, and a host of collateral conditions formerly entirely obscure or misunderstood, has been brought into daylight, and connected securely with the history of the corresponding organic lesions. Think what an advance has been made since the days when delirium tremens was supposed to be a kind of phrenitis, and treated with indiscriminate bleeding; when *apoplexia serosa*, now known to be almost always a sequela of serious, and for the most part irreparable, organic changes in the kidney, was regarded as evidence of congestion of the brain; when valvular disease of the heart was almost sure to pass for asthma, or dropsy, or hæmoptysis, and to be treated without reference to its cause in the central organ of the circulation; when embolism, white softening, calcareous and other degenerations of the arteries, etc., were unknown as the causes of apoplexy or paralysis, and almost all cases of sudden disorder within the brain were regarded as congestive or inflammatory, and treated by bleeding or purging; when attacks of mania, even occurring in connection with general paralysis or in the dementia of epilepsy, had no other pathology than an inflammation or congestion supposed, and only supposed, to exist: when the delirium of fever had most frequently a like explanation, and was too often met by the inevitable emission of blood. The changes of our point of view in these and many other similar instances we owe to an exact and detailed study of the visible and tangible

facts of disease, pursued essentially after the pathological and clinical method initiated by Morgagni; and in every instance the result has been the dispersion of a host of vain imaginations, which had led the minds of men for centuries, and contributed largely to a most irrational practice.

But modern pathology has not contented itself with these triumphs. Its aim now is not only to grapple with the question of the "seats and causes of diseases," in the sense in which Morgagni understood the expression, but to investigate and unfold the more intimate nature of pathological processes; to trace the intricate changes in the tissue-cells which constitute inflammation, tubercle and cancer; to make visible through the microscope, and sensible through a refined chemical analysis, the degenerative processes through which heart, and liver, and kidneys, and arteries, and brain are rendered unfit for the performance of their functions; and here again, to trace out by a more exact and a much more refined examination of symptoms, the relation of the functional disturbance, as observed during life, to the essential organic change. It seems, indeed, as if we were going back again to the old and fruitless research into the proximate causes of disease; but with this difference, that what we seek now is not a mere notion embodied in a word, such as were the alleged causes which occupied so much space in the ancient pathologies, but a positive result of science

resting upon detailed evidence, and only open to controversy in so far as exact observation, and carefully performed experiments are liable to vary and to fail even in the most practised hands. But to carry this new science of pathology to its utmost limits, nay, even to appreciate its processes and verify their results, requires no less than that the observer should have spent, and be willing to spend, hours upon hours continuously over his microscope, or in the chemical laboratory, or in the extremely delicate and absorbing work of physiological and pathological experiment. The *Cellular Pathology* of Virchow, with all the detailed observations and doubtful questions that have arisen out of it; the exquisite researches of Cohnheim and Recklinghausen; the experimental, physical, and physiological results obtained by Klein and Sanderson, and many other and younger workers, seem to be leading the way to new depths of science that can only be sounded through the absolute devotion of a lifetime to new methods of research. It is here, I confess, that I begin to feel as if my proper place were not exactly to be at the head of this society. Having served my apprenticeship to some of these advanced methods, in days now long gone by, I am free to confess that the more recent advances have carried the more strictly scientific studies in pathology into regions far beyond my depth. But I have one consolation. If I am too old to teach, or to investigate with success

in these novel lines of investigation, I am not too old to learn their results from you. In your excellent Vice-President, Dr. Joseph Coats, you have a man admirably qualified by study and capacity, as well as by personal experience, to keep us all from going astray in these untrodden paths. And for myself, though I may fail in these most recondite departments, I may possibly still be allowed to present to you, from time to time, the results of clinical experience, and so to help you to work out your programme of a Clinical, as well as a Pathological Society.

[In resuming the office of President, October, 1888, by an unanimous vote of the Society, Dr. Gairdner gave a short address supplementary to the one here printed; and said that during the fifteen years of the Society's existence, it had very fully carried out the programme of work which had been adopted in the first instance. In further illustration of the practical value of the method here adverted to, he indicated the recent advances in cerebral physiology and pathology, and the splendid surgical results recently laid before the British Medical Association by Dr. Wm. Macewen (a Member of the Pathological and Clinical Society) as the late fruit of a long course of clinical, pathological, and experimental research, pervaded throughout by the spirit and method of Morgagni.]

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